



(11) Publication number : **0 478 238 A3**

(12) **EUROPEAN PATENT APPLICATION**

(21) Application number : **91308592.4**

(51) Int. Cl.⁵ : **H04L 27/16**

(22) Date of filing : **20.09.91**

(30) Priority : **24.09.90 US 586804**

(43) Date of publication of application :
01.04.92 Bulletin 92/14

(84) Designated Contracting States :
AT BE CH DE DK ES FR GB IT LI NL

(88) Date of deferred publication of search report :
02.12.92 Bulletin 92/49

(71) Applicant : **IN-SITU, INC.**
201 South Third Street
Laramie, Wyoming 82070-0920 (US)

(72) Inventor : **Weeks, Richard W.**
2679 Kennedy Avenue
Laramie, Wyoming 82070 (US)
Inventor : **Eisenhauer, Edward R.**
1810 Bill Nye
Laramie, Wyoming 82070 (US)

(74) Representative : **Targett, Kenneth Stanley et al**
D. Young & Co. 10 Staple Inn
London WC1V 7RD (GB)

(54) **Automatic frequency control system and method for frequency-shift-key data transmission systems.**

(57) The present invention provides a system and method of automatic frequency control (AFC) in a frequency-shift-key (FSK) data transmission system that allows a receiver to be used that has a bandwidth that approaches the requisite minimum bandwidth for a given data transmission rate and produces a substantial signal noise ratio (SNR) in the detected signal by the receiver. The invention includes a transmitter that outputs a SPACE signal and a MARK signal in a preamble that precedes the transmission data. The apparatus also includes a receiver (24) that uses the SPACE and MARK signals to adjust the frequency of the signal output by a voltage-controlled-oscillator (VCO) (42) to tune the receiver and thereby improve the signal-to-noise ratio (SNR) in the signals subsequently detected by the receiver.

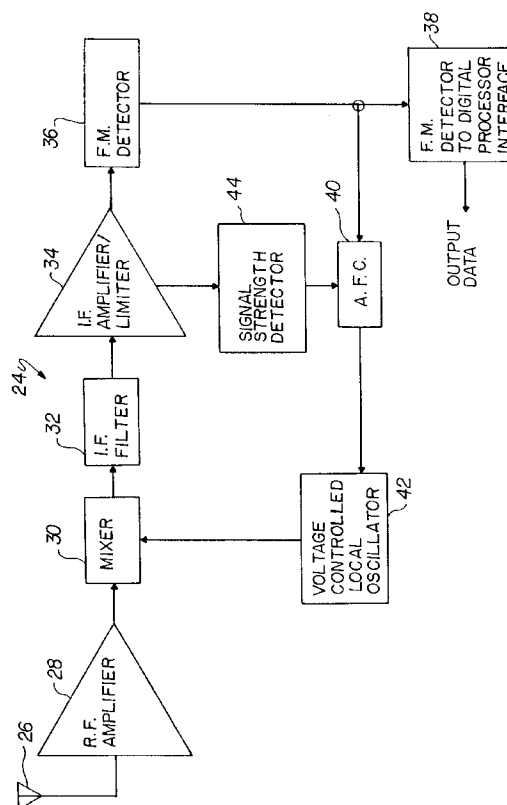


FIG. 3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 30 8592

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	US-A-4 897 857 (WAKATSUKI ET AL.) * abstract * * column 2, line 19 - line 29 * * column 2, line 33 - line 50 * * column 4, line 64 - line 67 * * column 5, line 9 - line 14 * * column 5, line 37 - line 41 * * column 5, line 62 - column 6, line 21 * * figures 3,5-9 *	1-10	H04L27/16
A	FR-A-2 601 533 (LA TELEMECANIQUE ELECTRIQUE) * page 1, line 19 - line 24 * * page 3, line 27 - line 34 * * page 7, line 6 - line 10 * * page 7, line 29 - page 8, line 2 * * page 9, line 1 - line 8 * * figures 3-5 *	1-3,6,8,9	
A	PATENT ABSTRACTS OF JAPAN vol. 7, no. 166 (E-188)21 July 1958 & JP-A-58 073 247 (KIYUUSHIYUU DENRIYOKU) 2 May 1983 * abstract; figure *	1-5,7-10	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	US-A-2 541 128 (VIOLET) * column 1, line 6 - line 17 * * column 3, line 24 - line 68 * * claim 1; figure 5 *	1,3,6,8,9	H04L H03D H04M
A	EP-A-0 260 788 (SCULLY SIGNAL) * abstract * * column 3, line 22 - line 35 * * column 3, line 47 - line 51 * * column 11, line 20 - line 24 * * figures 1,5-7 *	1-3,8,9	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 SEPTEMBER 1992	Examiner GHIGLIOTTI L.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 01.82 (P0401)